

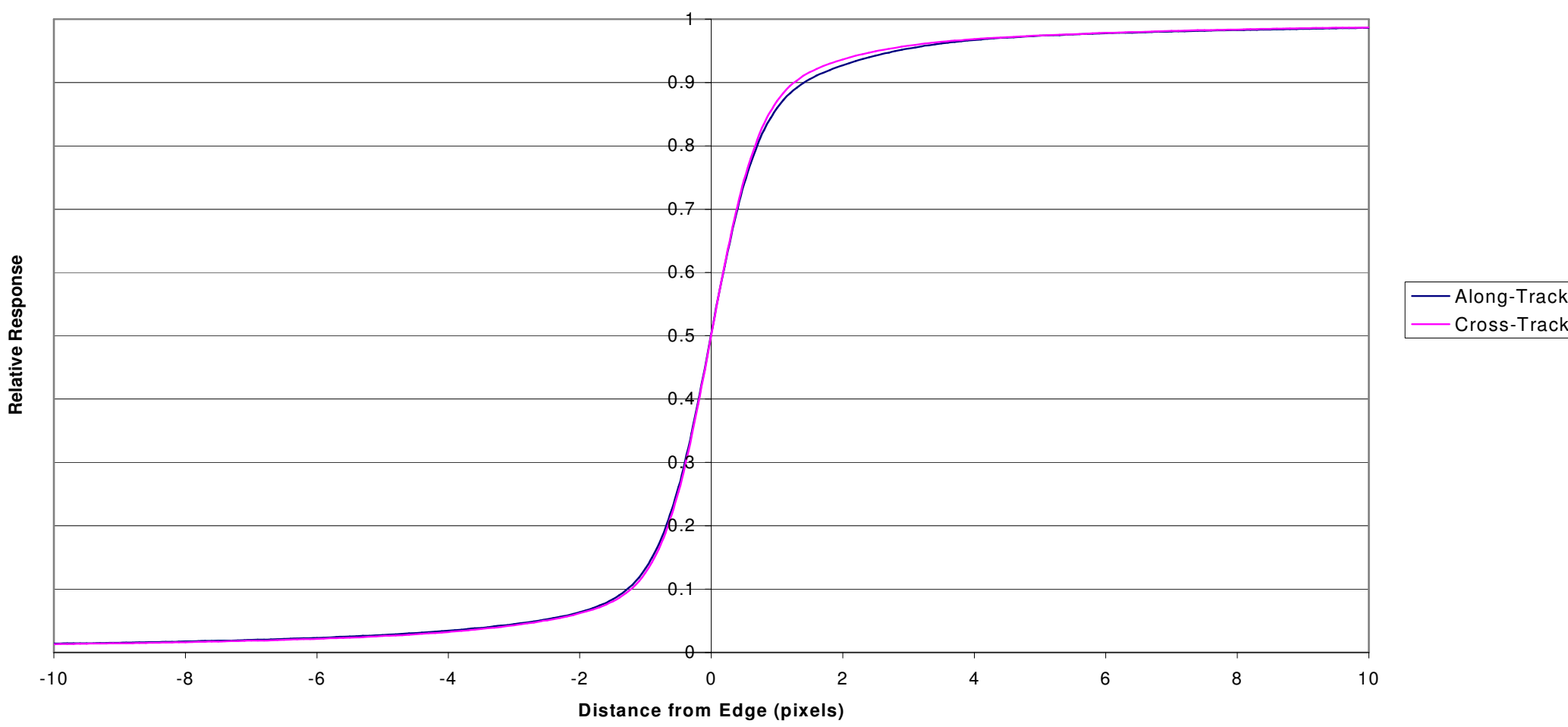
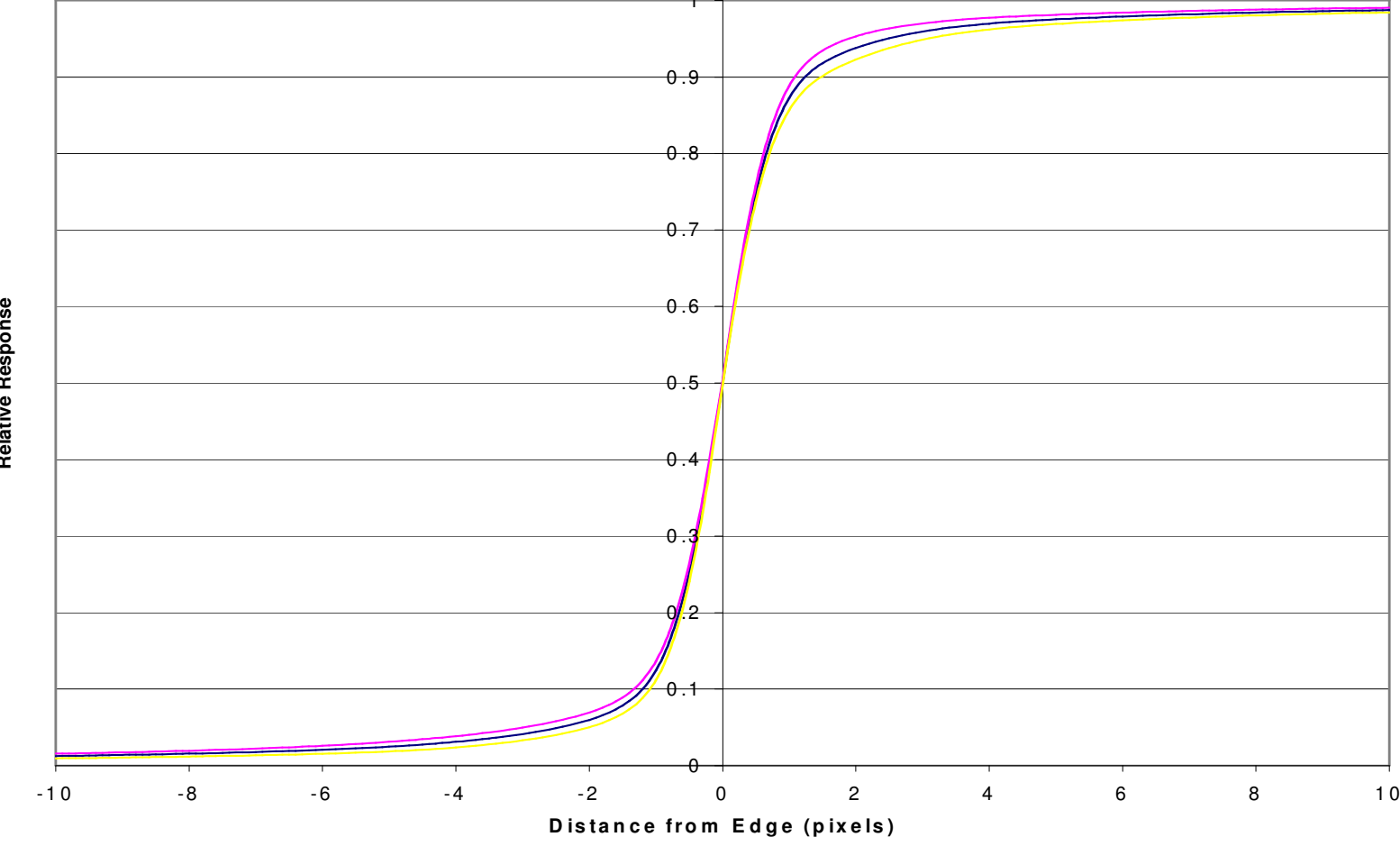
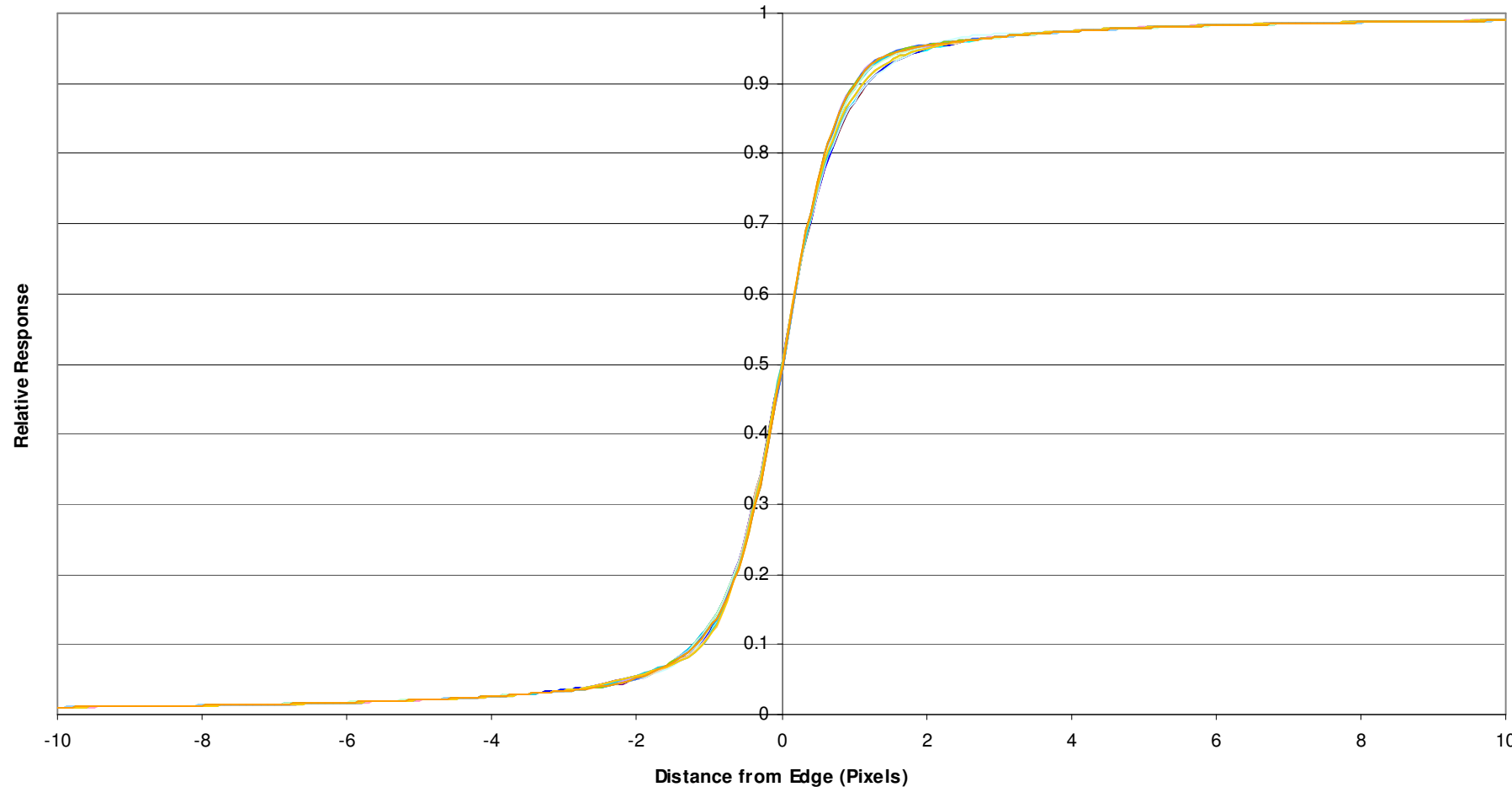
## Summary

This poster presents an assessment of the pre-launch and post-launch spatial image quality of DigitalGlobe's WorldView-1 instrument raw products. Pre-launch assessment was accomplished with the instrument in a vacuum, 1-g environment using an edge target at the focus of a collimator. Post-launch assessment was accomplished using a ground edge target at Big Spring, Texas. Orthogonal edges are analyzed by fitting a continuous function to sub-pixel sampled one-dimensional profiles of the edge. These are then differentiated to produce line responses. The modulation transfer function (MTF) of the system is also calculated. Edge response slopes and MTF values at the Nyquist sampling frequency are compared across the field of view. On-orbit data span the first several months of operation and show highly consistent performance both temporally and across the field of view. This performance also comfortably exceeds customer requirements.

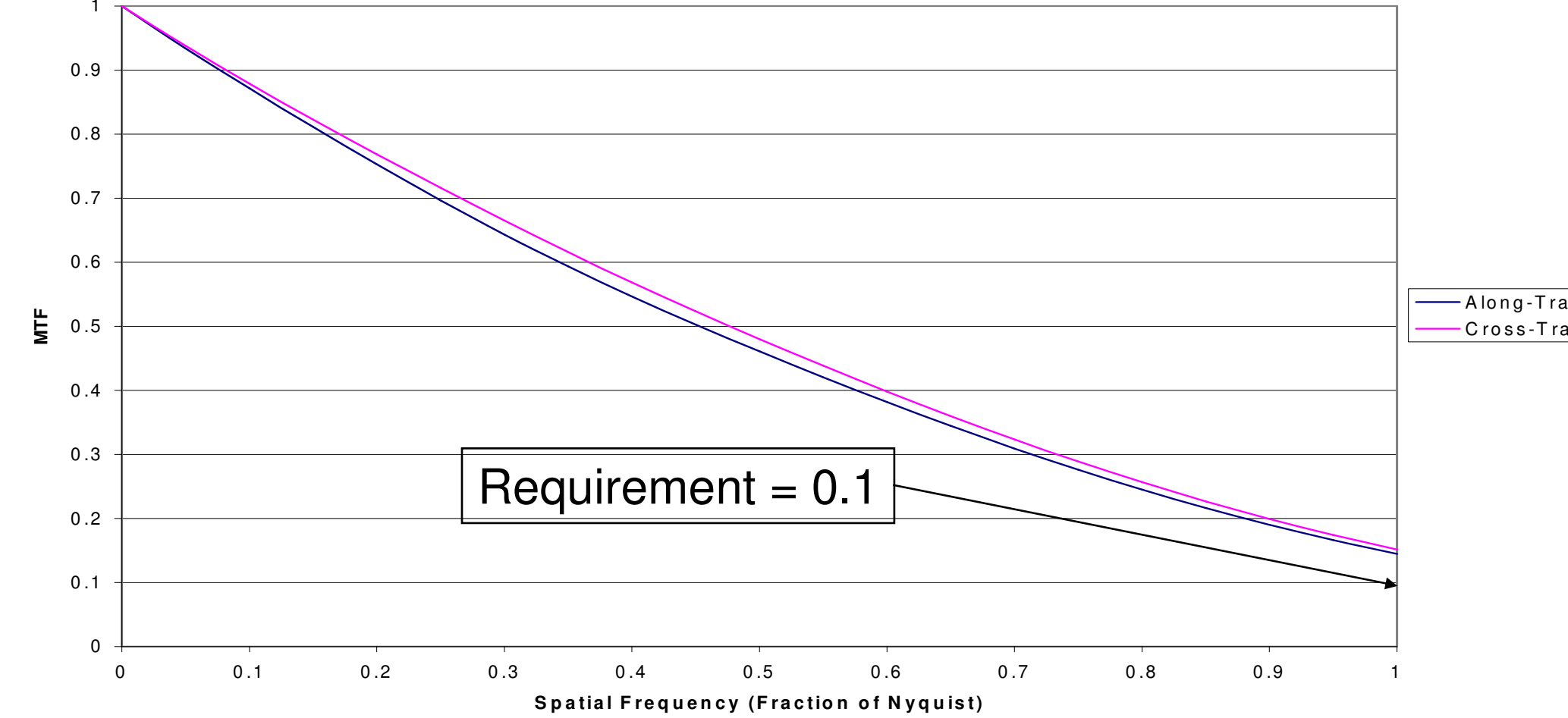
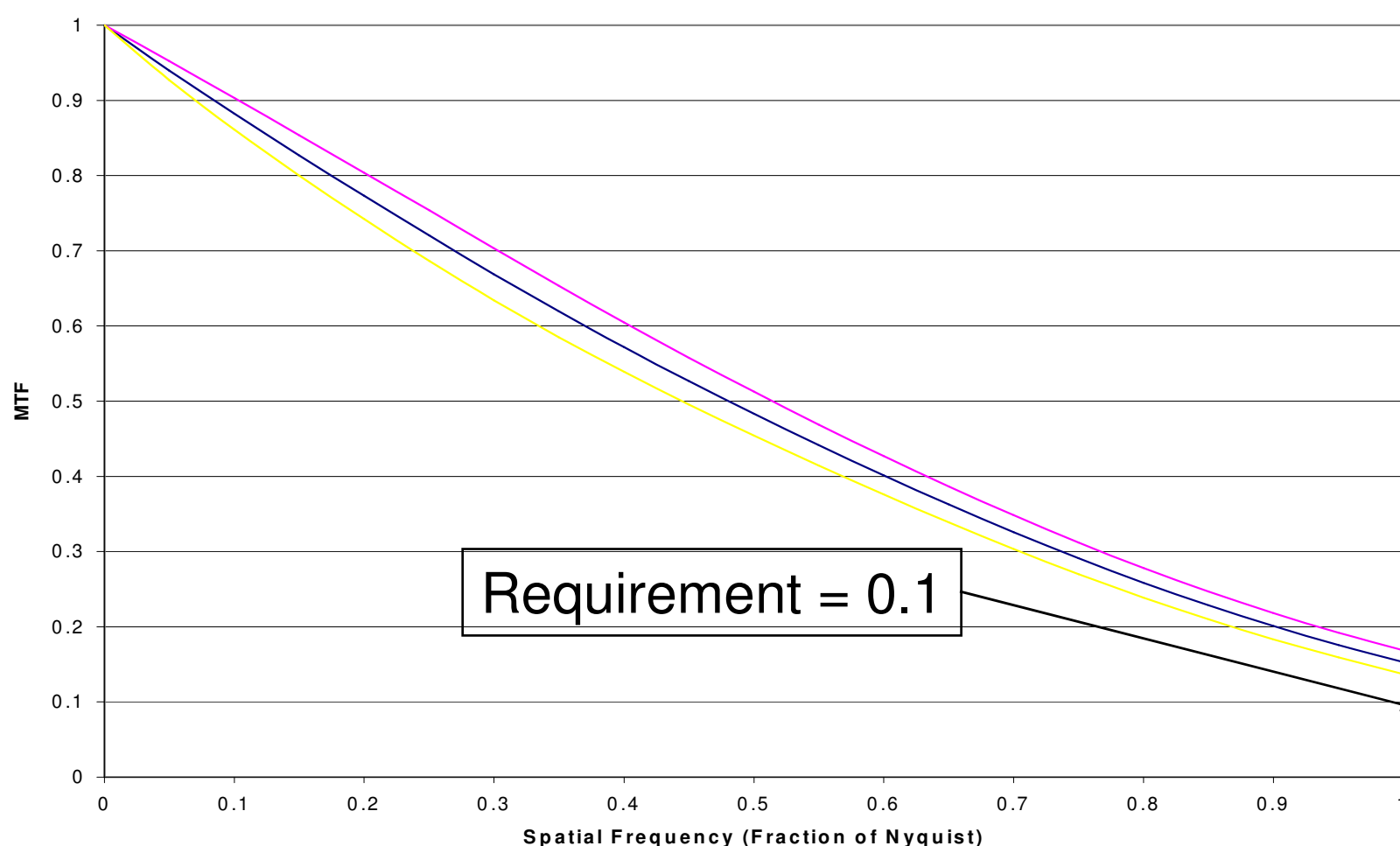
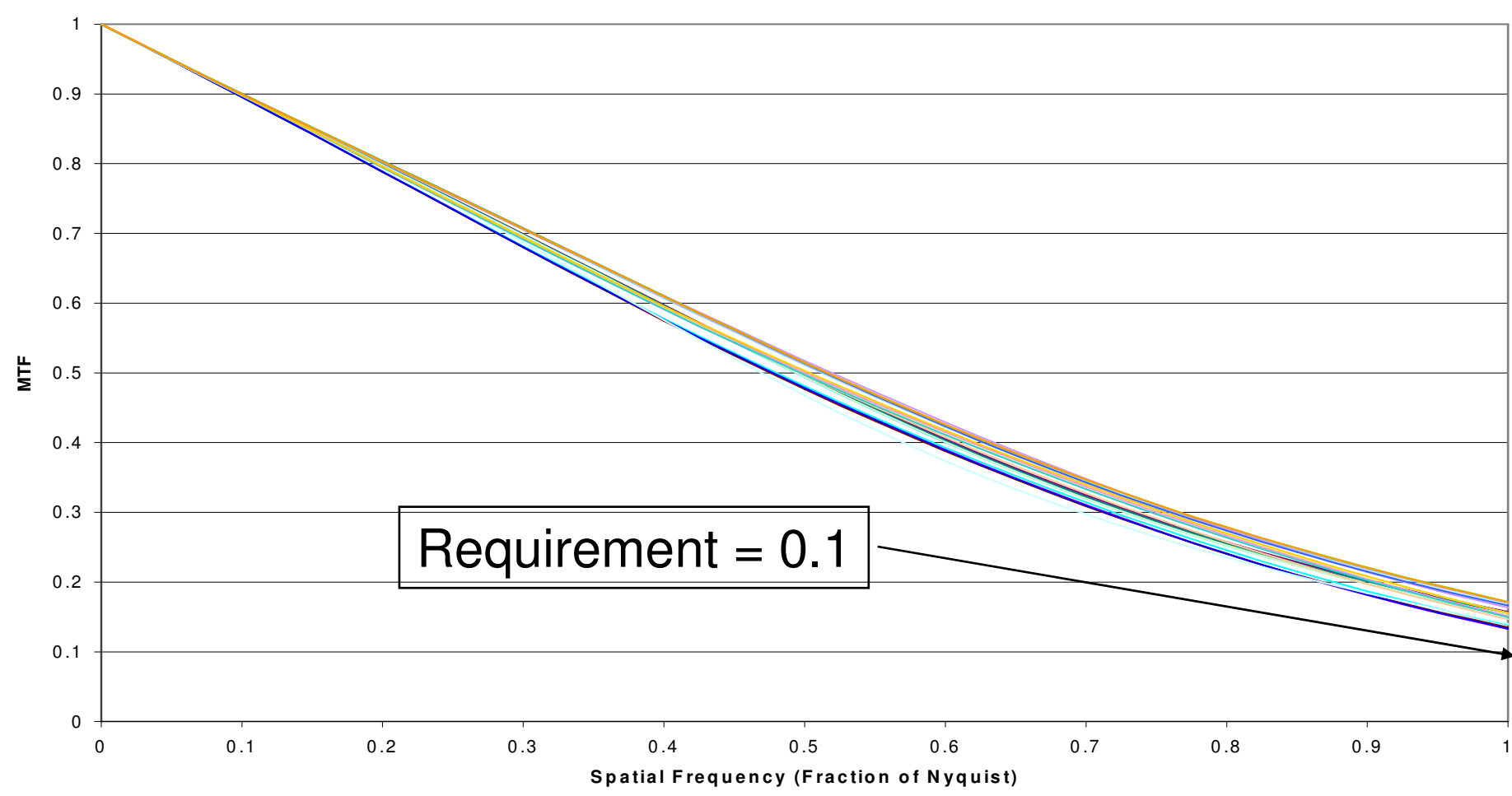
### Ground Measurements Using Collimator in Vacuum

### On-Orbit Measurements Using Target at Big Spring, TX (51 images)

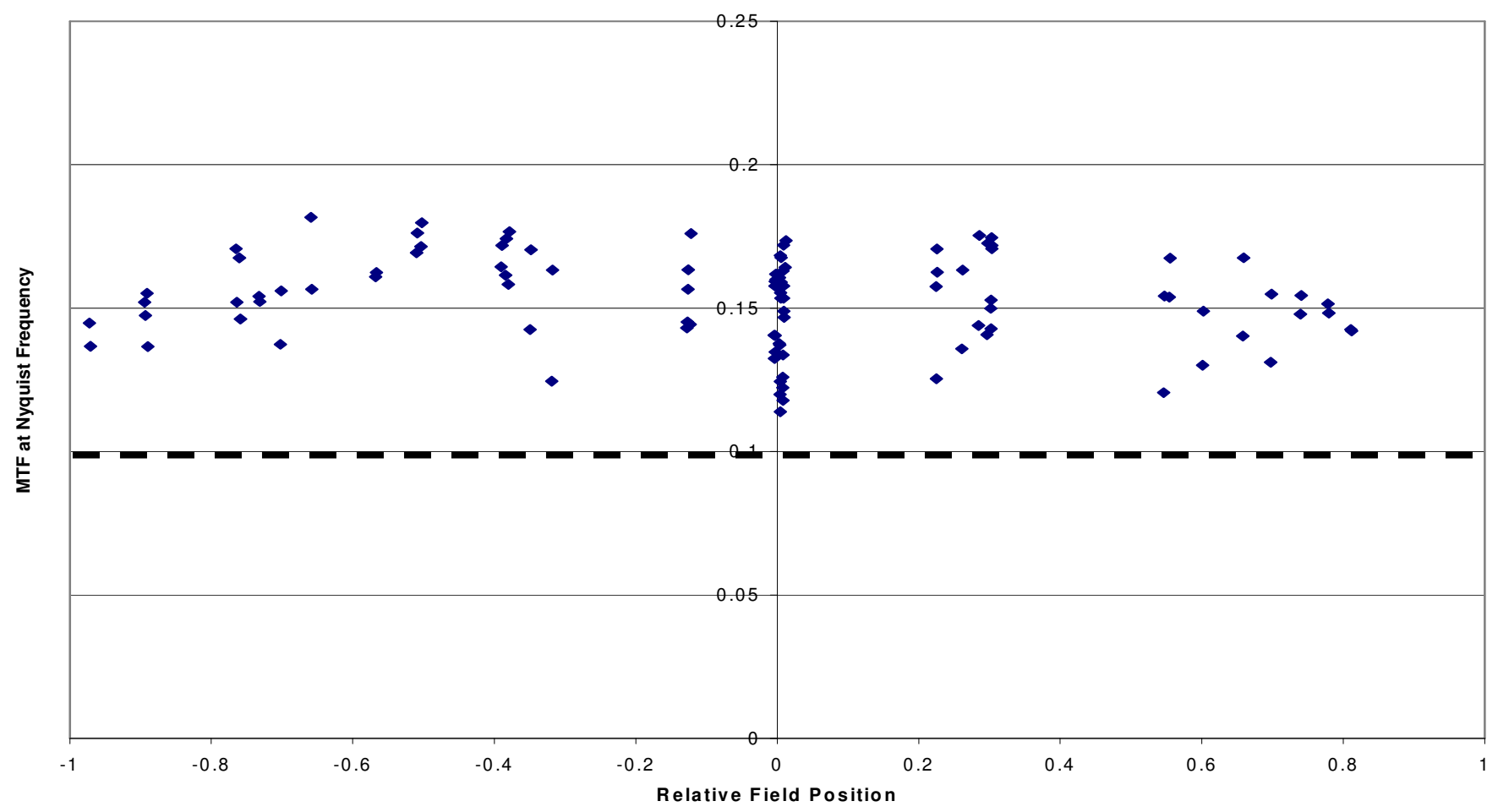
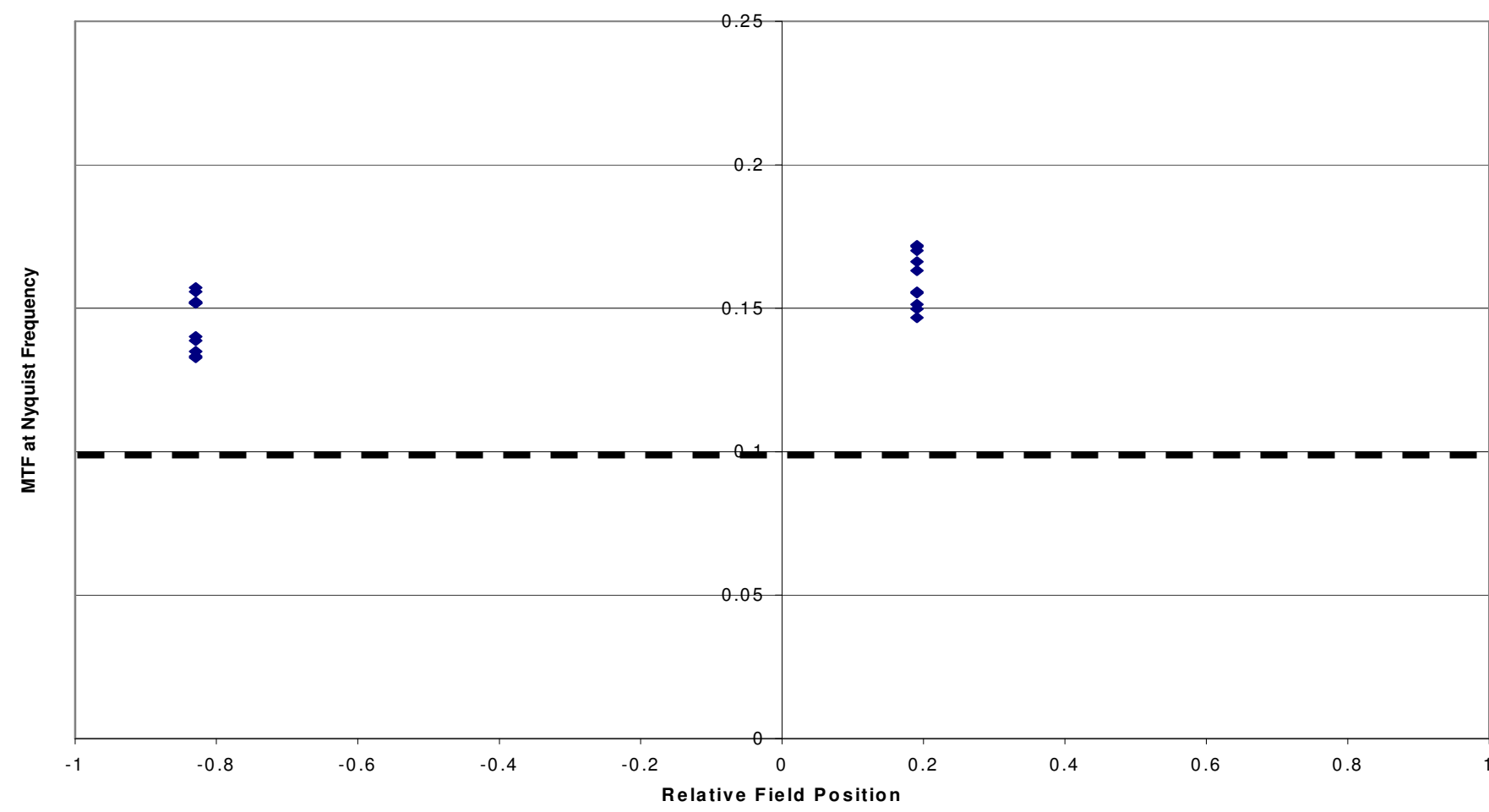
#### Edge Response



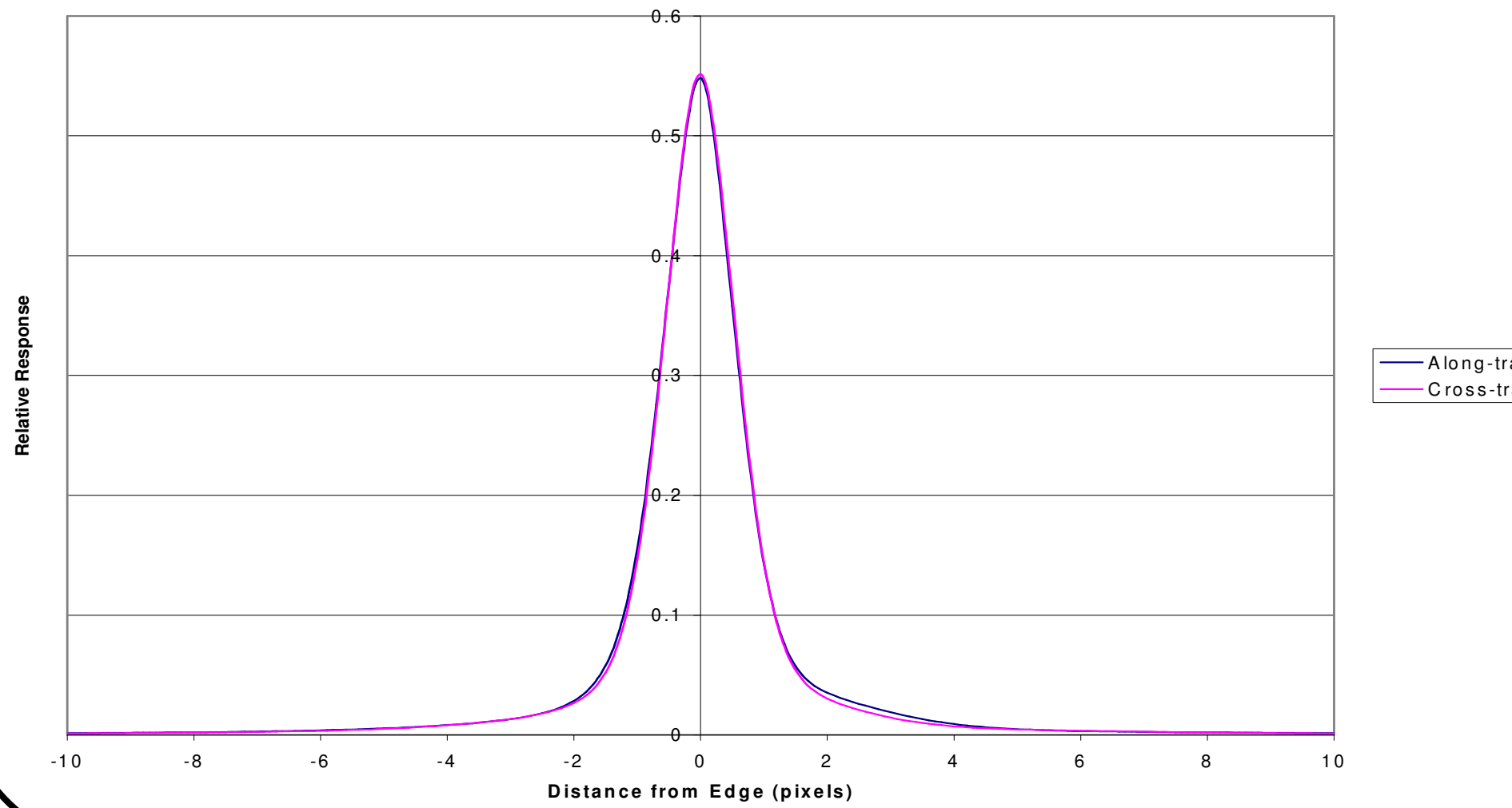
#### MTF



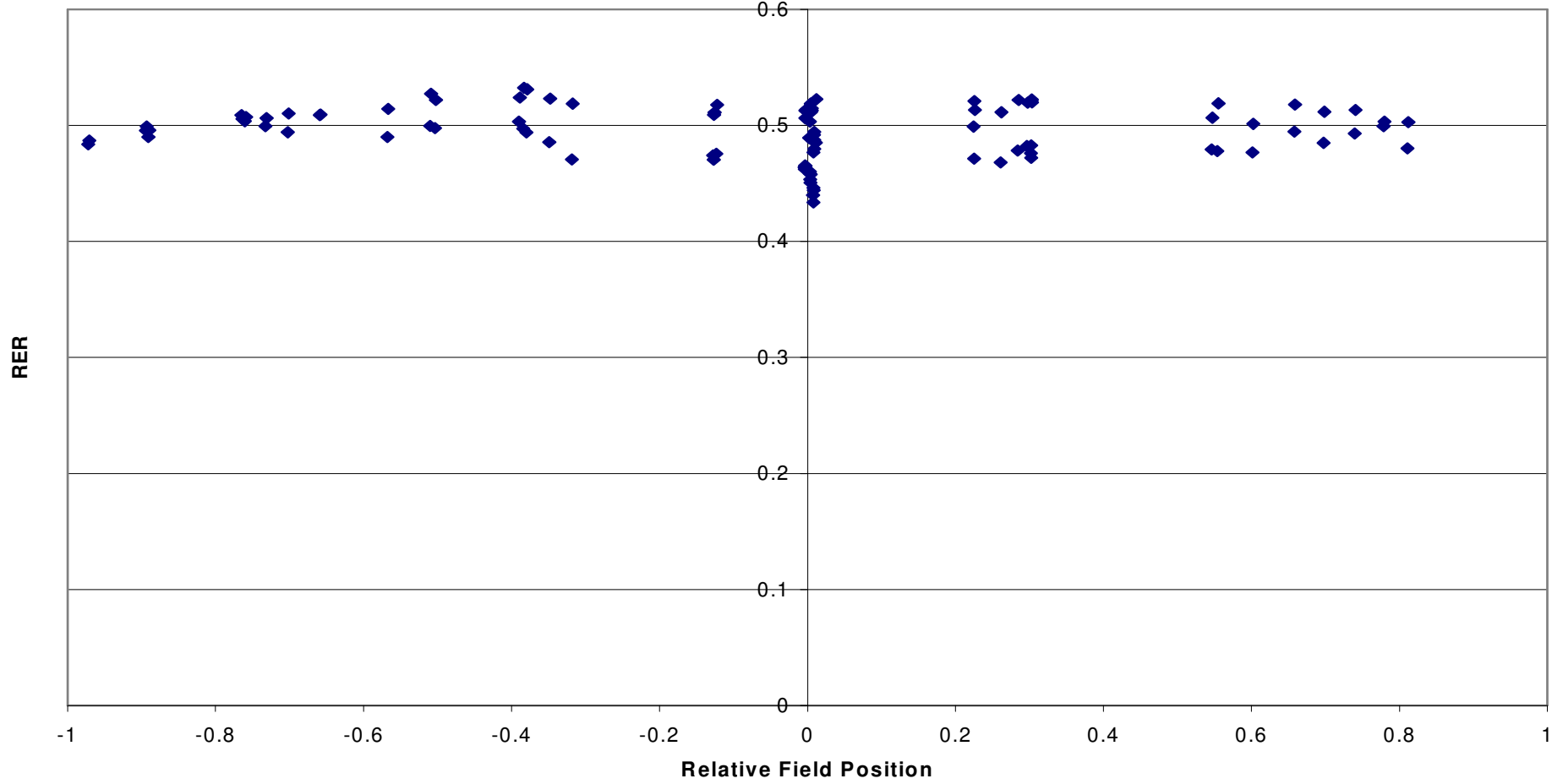
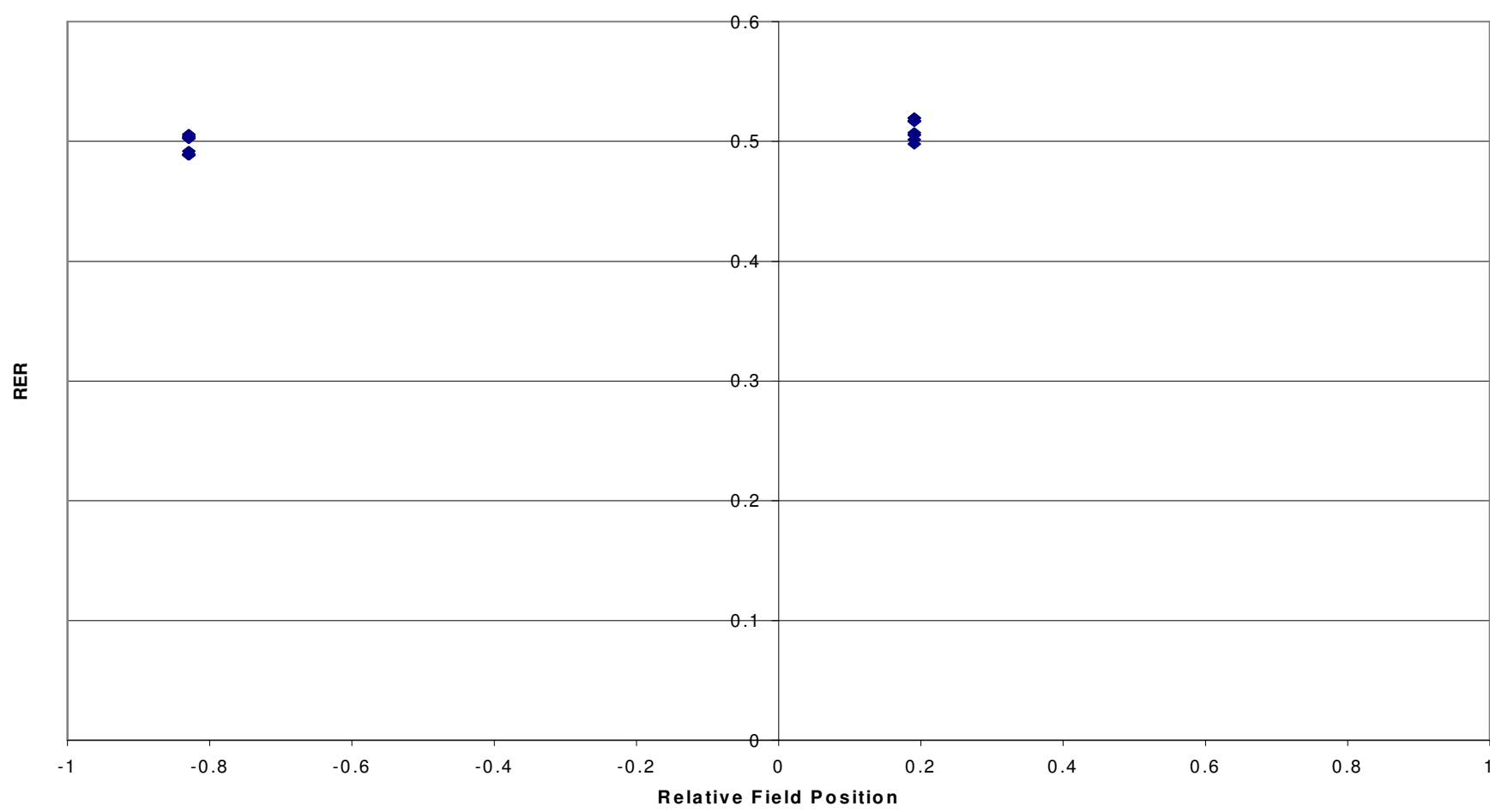
#### MTF vs Field (Nyquist)



#### On-Orbit Line Response



#### Relative Edge Response vs Field



Special thanks to Ball Aerospace Technologies Corporation for providing knife-edge images from vacuum tests in their facility under contract to DigitalGlobe.

MTF analysis algorithms from Canova, Brent P., Day, R. Joe, and Lumia, John J. (1999). Modulation transfer function testing of a time-delay-integrate charge-coupled-device imager using a flashlamp light source. In: Proceedings of SPIE, Vol. 3750, pp. 368-375.